NOTES ON SOME WESTERN AUSTRALIAN FISHES.

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PLATES XXIX.-XXXI., and FIG. 1.

The specimens on which the following notes are based are part of the collections referred to in my previous paper dealing with fishes from Western Australia.[1] Most of them are from South-western Australia, but a few from Port Hedland add a little to our knowledge of the fauna of the great North-western Coast, which is, at present, largely unknown.

Family RHINOBATIDAE.

RHINOBATUS BANKSII, Müller and Henle.

Rhinobatus banksii, Waite, Mem. Austr. Mus, IV., pt. I., 1899, p. 38, pl. III. *Id.*, Zietz, Trans. Roy. Soc. S. Austr., XXXII, 1908, p. 292.

A young male, 580 mm. long, from Western Australia, does not differ from Port Jackson specimens of this species. *R. banksii* has been identified in South Australia by Zietz.

Family CLUPEIDAE.

ETRUMEUS JACKSONIENSIS, Macleay.

PLATE XXIX.

Etrumeus jacksoniensis, Macleay, Proc. Linn. Soc N.S.Wales, III., 1878, p. 36, pl. IV, fig. i, and *loc. cit.*, IV., 1879, p. 382. *Id.*, Ogilby, Ed. Fish. N.S.Wales, 1893, p. 186. *Id.*, Zietz, Trans. Roy. Soc. S. Austr., XXXII., 1908, p. 294.

D.21; A.11? P.16; V.9; C.17. Head 4.45 in the length to the hypural; height before the dorsal fin 5 54 in the same, and 1.24 in the head. Snout and eye subequal in length, the latter 3.06 in the

[1] McCulloch.—Rec. W. Austr. Mus., I., pt. 2, 1912, pp. 78-97, pls. IX-XIII.

head. Interorbital width equal to the depth of the caudal peduncle, 3.83 in the head. Mandible 2, maxillary 2.87, highest dorsal ray 1.53, and pectoral 1.53 in the head.

Body elongate, subcylindrical and slightly compressed. Head deeper than broad, pointed and flattened above. A thick, transparent membrane extends from the snout, over the eye to the preoperculum. Jaws subequal. Maxillary almost entirely exposed, only the upper edge slipping under the preorbital ; it reaches back almost to below the anterior orbital border, and though broad, is scarcely expanded posteriorly. Hinder margin of preoperculum sloping very obliquely backwards and downwards, the angle sharply rounded. The opercular margin forms an obtuse angle posteriorly. No teeth are visible, even under a lense, but the jaws and bones of the palate are a little rough to the touch. Gill openings large, the membranes free from the isthmus.

Origin of dorsal almost midway between the tip of the snout and the vertical of the end of the anal. Ventrals inserted behind the tip of the adpressed dorsal and somewhat nearer the hypural than the pectorals ; the first ray is more than one-third as long as its distance from the anal. Anal very small, its origin much nearer the hypural than the ventrals. Pectorals opening horizontally, the anterior rays as long as those of the dorsal ; their hinder borders are a little emarginate.

Scales of moderate size, cycloid, and they appear to have fine longitudinal striations on their exposed surfaces. They are nearly all missing in my specimen, but there seem to have been eighteen on the back before the dorsal fin, and about fifty-six between the hinder margin of the head and the hypural. The bases of the dorsal and anal fins are enveloped in scaly sheaths, and the pectorals and ventrals each have a long flap composed of axillary scales.

The colour appears to have been dark blue on the back, sharply separated from the silvery sides and belly. Tips of the jaws blackish.

Described from a single specimen, 220 mm. long, from Albany. A few specimens of this species have been taken in Port Jackson, and it is recorded from South Australia by Zietz.

Family ENGRAULIDAE.

ENGRAULIS ANTIPODUM, Günther.

Engraulis encrasicholus var. *antipodum*, *Günther, Brit. Mus. Cat. Fish., VII., 1868, p. 386.

Eight examples from Freshwater Bay, Swan River, do not differ from Tasmanian specimens in the Australian Museum.

Family PLOTOSIDAE.

CNIDOGLANIS MEGASTOMUS, Richardson.

Plotosus megastomus, Richardson, Zool. "Erebus and Terror," Fishes, 1845, p. 31, pl. XXI., fig. 1-3.

Cnidoglanis megastoma, Günther, Brit. Mus. Cat. Fish., V., 1864. p. 27. *Id.*, Klunzinger, Sitzb. Akad. Wiss. Wien., LXXX., i., 1879, p. 410.

Cnidoglanis bostockii, Castelnau, Proc. Zool. Soc. Vict., II., 1873, p. 140.

A young example, 177 mm. long, from the Swan River, does not differ from Port Jackson specimens of this species. It also agrees very well with Castelnau's description of *C. bostockii*, so that Klunzinger's suggestion of the identity of that species with *C. megastomus* is proved correct.

Family MURAENIDAE.

GYMNOTHORAX PRASINUS, Richardson.

Gymnothorax prasinus, Waite, Rec. Austr. Mus., V., pt. 3, 1904, p. 144.

Two specimens from Fremantle agree in every detail with others in the Australian Museum from near Sydney.

Family ATHERINIDAE.

ATHERINA PINGUIS (Lacépède) Ogilby.

Atherina pinguis, Ogilby, Mem. Qld. Mus., I., pt. I, 1912, p. 38, pl. XII., fig. 1.

Two examples are in the collection from Fremantle. Waite examined specimens from the same locality, and recorded them as *A. lacunosa*, Forster. [1]

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[1] Waite, Rec. Austr. Mus., IV., 1902, p. 180.

Family POLYNEMIDAE.

Genus POLYDACTYLUS, Lacépède.

POLYDACTYLUS (ELEUTHERONEMA) TETRADACTYLUS, Shaw.

Polynemus tetradactylus, Günther, Brit. Mus. Cat. Fish, II., 1860, p. 329. *Id.*, Day, Fish. India, 1878, p. 180. *Id.*, Macleay, Proc. Linn. Soc. N.S. Wales, VIII, 1883, p. 203. *Id.*, Kent, Gt. Barrier Reef, 1893, p. 287, pl. XLVI, fig. 2, and Nat. in Austr., 1897, p. 168-9.
Polynemus coecus, Macleay, Proc. Linn. Soc. N.S. Wales, II., 1878, p. 354, pl. IX, fig 1.

Having examined the type of *P. coecus* in the Macleay Museum, I have to support Klunzinger's opinion that that species is synonymous with *P. tetradactylus*.

A large specimen is preserved from Fremantle.

Family GADIDAE.

PHYSICULUS BARBATUS, Günther.

Physiculus barbatus, Zietz, Trans. Roy. Soc. S. Austr., XXXIII., 1909, p. 266.
Id., McCulloch, Zool. Res. "Endeavour," pt. I, 1911, p. 38—synonymy.

Albany. One specimen, 345 mm. long.

Family PEMPHERIDAE.

Genus LEPTOBRAMA, Steindachner.

LEPTOBRAMA MÜLLERI, Steindachner.

Leptobrama mülleri, Steindachner, Sitzb, Akad. Wiss. Wien, LXXVIII, i., 1878, p. 388, and Denks. Akad. Wiss. Wien, XLI, i., 1879, pl. III, fig. 1.
Id., Klunzinger, Sitzb. Akad. Wiss. Wien, LXXX, i., 1879, p. 381.
Neopempheris ramsayi, Macleay, Proc. Linn. Soc. N.S.Wales, V., 1881, p. 517, pl. XIV.
? Neopempheris pectoralis, Ramsay and Ogilby, Proc. Linn. Soc. N.S.Wales, (2), II., 1887, p. 563.

A comparison of the type of *Neopempheris ramsayi* with Steindachner's figure of *Leptobrama mülleri* leaves no doubt as to the identity of the two species.

Mr. Ogilby has examined several specimens from Moreton Bay and informs me that he considers *N. pectoralis*, may be synonymous with *N. ramsayi*. I have compared the two type specimens and find only a few differences between them which are probably not specific. Mr. Ogilby will give details in his paper in the memoirs of the Queensland Museum.

A fine specimen, 297 mm. long, from Port Hedland, is in the Western Australian Museum collection.

Family SERRANIDAE.

EPINEPHALUS MEGACHIR, Richardson.

Epinephalus megachir, Boulenger, Brit. Mus. Cat. Fish., (2 ed.), 1895, p. 219.

Port Hedland. One specimen, 230 mm. long.

PSAMMOPERCA WAIGIENSIS, Cuvier and Valenciennes.

Psammoperca vaigiensis, Boulenger, Brit. Mus. Cat. Fish, (2 ed.), I, 1895, p. 365.

A small specimen, 210 mm. long, from Geraldton, differs from larger ones in the Australian Museum from Torres Strait in having the snout more pointed, and its upper profile more concave.

Family PSEUDOCHROMIDIDAE.

GNATHYPOPS INORNATUS, Ramsay & Ogilby.

PLATE XXX.

Opisthognathus inornatus, Ramsay and Ogilby, Proc. Linn. Soc. N.S.Wales, (2), II., 1887, p. 561.

A very large specimen, 485 mm. long, from Port Hedland, differs from the type in having a much smaller eye, the head very much more tumid, and the pectorals more rounded. The scales are obsolete anteriorily and the whole head, body and fins are covered with soft, plicated skin; on the anterior portion of the ventrals and the margin of the spinous dorsal the skin is particularly thick and convoluted. All these differences are doubtless due to the age of the specimen.

I have figured one of the two type specimens, which are in bad condition; only the spots on the body are copied from the larger example.

The following is a key to the Australian species of *Gnathypops*, Gill, and *Merogymnus*, Ogilby, all of which are represented in the Australian Museum.

a. Outer row of teeth considerably larger than the others. Scales extending forward to below origin of soft dorsal. *Gnathypops.*

b. Body and fins light with numerous small dark brown spots - - - - - *maculatus.*[1]

bb. Body and fins dark, sometimes with irregular scattered dark spots - - - - - *inornatus*

bbb. Head with small, body with large incomplete brown rings, dorsal, anal and caudal with oblique bars, the former with a large black spot anteriorily. *darwiniensis.*[2]

aa. Outer row of teeth scarcely larger than the others. Scales not extending forward beyond middle of pectorals. *Merogymnus.*

c. Scales very small, covering the greater part of the sides and belly - - - *eximius.*[3]

cc. Scales larger, confined to hinder half of body, belly naked - - - *jacksoniensis.*[4]

I have compared the types of *Batrachus punctulatus*, Ramsay[5] and *Opisthognathus maculatus*, Alleyne and Macleay[1] and find them to be the same species.

Family GERRIDAE.

Genus PAREQUULA, Steindachner.

PAREQUULA MELBOURNENSIS, Castelnau.

Gerres melbournensis, Castelnau, Proc. Zool. Soc. Vict,, I., 1872, pp. 158, 245, and *loc. cit.*, II., 1873, p. 37. *Id.*, Macleay, Proc. Linn. Soc. N.S.Wales, V., 1881, p. 380.

Parequula bicornis, Steindachner, Denks. Akad. Wiss. Wien, XLI, i., 1879, p. 8. *Id.*, Klunzinger, Sitzb., Akad. Wiss, Wien, LXXX., i., 1879, p. 380.

Chthamalopteryx melbournensis, Ogilby, Proc. Zool., Soc., 1887, p. 616, figure. *Id.*, McCulloch, Zool. Res. "Endeavour" I., pt. 1., 1911, p. 63.

Having compared the description of *Parequula bicornis* with the specimens on which Ogilby based his genus *Chthamalopteryx*, I have no doubt that the two names refer to the one species. According to Steindachner the scales are ctenoid (ciliated) along the edge and

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[1] Alleyne and Macleay, Proc. Linn. Soc. N.S. Wales, I, 1877, p. 280, pl. IX, fig. 3.

[2] Macleay, Proc. Linn. Soc. N.S. Wales, II, 1878, p. 355, pl. IX, fig. 3.

[3] Ogilby, Proc. Roy. Soc. Qld., XXI, 1908, p. 18.

[4] Macleay, Proc. Linn. Soc., N.S. Wales, V, 1881, p. 570.

[5] Ramsay, Proc. Linn. Soc. N.S. Wales, VIII, 1883, p. 177.

on the outer surface near the margin, while Ogilby described them as cycloid. This discrepancy is explained by the fact that they appear cycloid to the naked eye, the very minute teeth being only visible under a microscope; some scales, also, particularly in young specimens, are quite smooth.

Nine specimens, 142-185 mm. long, are in the collection from Albany.

Family CHEILODACTYLIDAE.

DACTYLOPHORA, de Vis.

Dactylophora, de Vis, Proc. Linn. Soc. N.S.Wales, VIII., July 1883, p. 284 (*D. semimaculata*, de Vis).

Psilocranium, Macleay, Proc. Linn. Soc. N.S.W., VIII, Feb., 1884, p. 439 (*P. coxii*, Macleay).

This genus is apparently distinguished from all others of the family Cheilodactylidae in having the cheeks naked. In its short and high anal fin, large scales, and general form, it appears to be related to *Chirodactylus*, Gill.[1]

De Vis has described the teeth as arranged in several rows in the upper jaw, and in one in the lower. Mr. Ogilby has, at my request, re-examined the type specimen in the Queensland Museum, and finds a band of villiform teeth in the upper jaw, which is much broader in front than laterally, and three series of small curved teeth in the lower jaw. In full-grown specimens the teeth become much more numerous.

DACTYLOPHORA NIGRICANS, Richardson.

Cheilodactylus nigricans, Richardson, Proc. Zool. Soc., 1850, p. 63, and Ann. Mag. Nat. Hist., (2), VII, 1851, p. 279.

Chilodactylus nigricans, Günther, Brit. Mus. Cat. Fish, II., 1860, p. 79. *Id.*, Gill, Proc. Acad. Nat. Sci. Philad., 1862, p. 118. *Id.*, Günther, Ann. Mag. Nat. Hist., (3) XX, 1867, p. 59. *Id.*, Canestrini, Arch. Zool. l'Anat (2), I., 1869, p. 155. *Id.*, Castelnau, Proc. Zool. Soc. Vict., I., 1872, p. 75. *Id.*, Macleay, Proc. Linn. Soc. N.S.Wales, V., 1881, p. 423. *Id.*, Johnston, Proc. Roy. Soc Tasm., 1890 (1891), p. 31. *Id.*, Waite, Rec. Austr. Mus., VI., 1905, p. 63.

Chilodactylus nebulosus, Klunzinger, Arch. Naturg., XXXVIII, i., 1872, p. 26, and Sitzb. Akad. Wiss. Wien., LXXX, i., 1897, p. 364. *Id.*, Steindachner, Sitzb. Akad. Wiss. Wien., LXXXVIII, i., 1884, p. 1078, pl. II., fig. 1. *Id.*, Macleay, Proc. Linn. Soc. N.S.Wales, IX, 1884, p. 17.

Dactylophora semimaculata, de Vis, Proc. Linn. Soc. N.S.Wales, VIII 1883, p. 284. *Id.*, Macleay, Proc. Linn. Soc. N.S.Wales, VIII., 1884, p. 441.

Psilocranium coxii, Macleay, *loc. cit.*, p. 440, pl. XXII.

Psilocranium nigricans, Macleay, *loc. cit.*, p. 441.

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[1] Gill, Proc. Acad. Nat. Sci. Philad., 1862, p. 119.

D. XV-XVI. 24-26; A.III. 9-10; P. 9 + 5-6; V.I.5; C.14-15; 1. lat. 48-51. Body moderately elongate, deeper in the young than in the adult, 3.24-4.10 in the length to the hypural. Head 3.3-4.10 in the same. Eye 4.38-6.23 in the head, and 1 61-2.23 in the snout. Snout 2.71-3, greatest breadth 2.11-1.77, caudal peduncle 3.56-2.84, longest pectoral ray 1.05-1.1, sixth dorsal spine 2.45-2.59 in the head. Eye 1.07-1.47 in the interorbital width.

Body covered with large cycloid scales, which become extremely small on the chest, and form a sheath at the bases of the dorsal and anal fins. Postorbital portion of head and opercles covered with small scales; remainder of the head naked. Fleshy eye-opening almost equal to the interorbital width in young specimens, much narrower in adults. Nostrils close together, in the hinder half of the snout; the anterior has a short skinny lobe. Lips very thick, maxillary reaching to below the anterior or posterior nostril A band of small cardiform teeth in each jaw which is broad in front, but becomes very narrow on the sides; vomer and palatines toothless.

Spinous dorsal a little shorter than the soft, and its margin is a little arched; the sixth spine is usually the longest, the others decrease regularly in length. Anterior dorsal rays equal to or higher than the longest spine; they become regularly shorter, and the margin of the fin is straight. Third anal spine longer, but much weaker than the second; anterior rays much higher than those of the dorsals, the posterior ones very short, so that the margin is a little excavated. Pectoral, with five or six simple rays, the fifth from the bottom the longest, reaching backwards to above the vent in young specimens and not so far as the ends of the ventrals in adults. Caudal forked.

Lateral line almost straight from the operculum to the upper portion of the caudal peduncle; it is formed of very small scales intercalated between the larger ones of the body, each of which bears a simple or bifurcate tube.

The colour markings are very distinct in the young, less so in adults. They consist of six broad brown bands, with darker edges, which descend from the back and run obliquely forward on the sides; a seventh less distinct one is present on the caudal peduncle. In addition, irregular rows of large dark spots are present on the lower parts of the sides. Two brown bands extend backwards

from the eyes, and one below it; the spaces between them are silvery. All the fins are dusky with narrow white edges; the soft dorsal may bear several rows of rather large brown spots, while several still larger ones are present on the caudal.

I have examined fifteen specimens, including a well graduated series, varying in length from 163-575 mm. from the tip of the snout to the end of the middle caudal rays. Of these, four are from South Australia. Seven, including the type of *Psilocranium coxii* are either from the neighbourhood of Sydney, or purchased in the Sydney markets, and one is from the Melbourne market. The three others are said to have come from the Clarence River, New South Wales, but I do not consider the evidence of their capture so far north as satisfactory.

Macleay compared his type of *Psilocranium coxii* with the four South Australian specimens mentioned above which he identified as *Chilodactylus nigricans* and *Dactylophora semimaculata*.[1] He noted its generic identity with Richardson's species, but did not recognise that they were all merely growth stages of the one species. I forwarded one of the smallest of these to Mr. Ogilby for comparison with the type of De Vis' *Dactylophora*, and he informs me that it cannot be separated from that species. He also agrees that it is the young of *C. nigricans*.

Klunzinger has also described this young stage as *C. nebulosa*, and Steindachner has given a beautiful figure of it under that name This may be compared with the very rough figure of *Psilocranium* to show the difference between the young fish and the adult.

Family KYPHOSIDAE.

KYPHOSUS SYDNEYANUS, Günther.

Pimelepterus sydneyanus, Ogilby, Ed. Fish. N.S.Wales, 1893, p. 40, pl. XVI.
Kyphosus sydneyanus, Zietz, Trans. Roy. Soc. S. Austr., XXXIII, 1909, p. 267.

A single specimen, 235 mm. long, from Houtman Abrolhos, is similar to others from Port Jackson. Zietz has recorded the species from St. Vincent Gulf.

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[1] See Macleay, Proc. Linn. Soc. N.S.Wales, VIII., 1883, p. 441.

TEPHRAEOPS TEPHRAEOPS, Richardson.

Crenidens tephraeops, Richardson, Zool. "Erebus" and "Terror," Fishes, 1847, p. 69, pl. LXI, figs. 1-2.

Tephraeops richardsonii, Günther, Brit. Mus. Cat. Fish, I., 1859, p. 432. *Id.*, Klunzinger, Sitzb. Akad. Wiss. Wien., LXXX, i., 1879, p. 356. *Id.*, Macleay, Proc. Linn. Soc. N.S.Wales, V., 1881, p. 410.

Tephraeops tephraeops, Waite, Rec. Austr. Mus., VI., 1905, p. 63

I count about 84 pores along the lateral line and 116 directly above it. Some notes on the teeth are given under *Melambaphes*.

Fremantle. One specimen,-290 mm. long.

MELAMBAPHES, Günther.

Melambaphes, Günther, Ann. Mag. Nat. Hist., (3), XI, 1863, p. 115 (*M. nigroris*, Günther=*Girella zebra*. Rich.; not *Glyphisodon nigroris*, Cuv. and Val.)

Girellichthys, Klunzinger, Arch. Naturg., XXXVIII, i., 1872, p. 22 (*G. zebra*. Rich.)

Neotephroeops, Castelnau, Proc. Zool. Soc. Vict., I., July, 1872, pp. 68, 248 (*N. zebra*, Richardson).

This genus differs from *Tephraeops* only in having the whole operculum scaly, the body scales somewhat larger, and the anal fin with an even margin, the anterior rays not being produced beyond the general line of the fin.

The teeth of the two are similar. Richardson described the vomer and palatines as toothless in *Tephraeops*, while Klunzinger found a group of small teeth on the vomer in *Girellichthys*. In my specimens of both genera, there are two or three minute, isolated, fixed teeth on the vomer, and a similar patch on the hinder end of each palatine bone; besides these, there are numerous microscopic setiform, dermal teeth, which are quite soft, surrounding the stronger fixed ones. All these teeth are very difficult to find, and might be easily overlooked.

MELAMBAPHES ZEBRA, Richardson.

Crenidens zebra, Richardson, Zool., "Erebus" and "Terror," Fishes, 1847, p. 70.

Tephraeops zebra, Günther, Brit. Mus. Cat. Fish., I, 1859, p. 432. *Id.*, Ogilby, Cat. Fish. N.S. Wales, 1886, p. 18.

Melambaphes nigroris, Günther, Ann. Mag. Nat. Hist., (3) XI, 1863, p. 115. (Not *Glyphisodon nigroris*, Cuvier and Valenciennes.)

Girella zebra, Steindachner, Sitzb. Akad. Wiss. Wien., LIII, 1866, p. 430, pl VI, fig 2.

Neotephroeops zebra, Castelnau, Proc. Zool. Soc. Vict., I, 1872, p. 69. *Id.* Macleay, Proc. Linn. Soc. N.S. Wales, V., 1881, p. 410.

Girellichthys zebra, Klunzinger, Arch. Naturg., XXXVIII, i., 1872, p. 22, and Sitzb. Akad. Wiss. Wien, LXXX, i. 1879, p. 356.

Mr. C. Tate Regan has, at my request, very kindly compared Günther's type specimen of *Melambaphes nigroris* with Steindachner's figure of *Girella zebra*, and writes to say that he has no doubt they represent the same species. Castelnau (*loc. cit.* p. 68) has given reasons for supposing that Günther's determination of the Victorian fish as *Glyphisodon nigroris*, Cuvier and Valenciennes, is incorrect. I fully agree with this conclusion, particularly as the latter species is said to generally resemble *G. rahti* and *G. bengalensis*, which are very different in appearance to *Melambaphes*.

I have examined four specimens from Albany, 180-290 mm. long. Of these one has thirteen dorsal spines, two have fourteen, and one has fifteen. There are 64-70 pores along the lateral line, and 90-100 scales immediately above it. A skin received from Count Castelnau as *Neotephroeops zebra*, is also in the Australian Museum.

Family CHAETODONTIDAE.

HOLACANTHUS (CHAETODONTOPLUS) PERSONIFER, sp. nov.

PLATE XXXI.

D.XIII.19; A.III.19; V.I.5; P.19; C.15. Body more elongate than is usual in the genus, the depth before the ventrals 2.3 in the length to the hypural. Head 4.7 in the same.[1] Eye $3\frac{3}{4}$ in the head, as long as the snout without the upper lip. Interorbital space convex, about half as wide again as the eye. Suborbital bone a little wider than the eye. Maxillary vertical, lower jaw the longer. Posterior preopercular margin finely dentate, lower entire; the spine is very large, longer than the width of the interorbital space. Teeth cardiform, tricuspid, the median cusp much larger than the others; they are arranged in about five rows in each jaw of which the outer ones are the longest.

Entire head, body and fins, with the exception of the ventral rays, covered with minute, strongly ctenoid scales which are very irregularly arranged. Lateral line distinct anteriorly, scarcely

[1] The anterior portion of this specimen having been partially cleaned out and refilled with straw, the head is somewhat distorted, and these measurements may not be quite accurate.

traceable posteriorly; it originates above the operculum and is curved upwards towards the back, with which it appears to run nearly parallel to the end of the dorsal fin.

Dorsal commencing above the end of the operculum, the first spine rather short, the next two increasing rapidly in length, the others becoming gradually longer to the last. The margin of the fin is almost straight, the soft portion broadly rounded behind. Anal of similar form to the dorsal. Upper pectoral rays longest; the margin of the fin rounded. First ventral ray a little produced, and somewhat longer than the pectoral fin. Caudal slightly emarginate.

Colour.—Head grey, with large yellow spots. The anterior portion of the body and chest is bright yellow shading into white, this colour forming a sharp line with the deep black of the rest of the body which forms a backward curve from the first dorsal spine to the ventral fin. The black colour projects forward behind the pectorals on to the coracoid bone, and the basal half of the pectoral fin is also of this colour. Ventrals yellow with white tips. Dorsal and anal black like the body, as is the greater part of the caudal which bears a lunate, yellow, submarginal band with a narrow blackish border.

Described from a single example, 290 mm. long, from Shark Bay.

I am indebted to Mr. W. B. Alexander for notes on the life-colours of this specimen.

The colour pattern distinguishes this species from all others of the genus known to me, though I have been unable to compare it with *H. zebra*, *H. reginae*, and *H. caudibicolor* of Lienard.[1] It appears to be nearest allied to *H. conspicillatus*, Waite.[2]

HOLACANTHUS DUBOULAYI, Günther.

Holacanthus duboulayi, McCulloch, Rec. Austr. Mus. IX., pt. 3, 1913, p. 360, pl. XIV.

Port Hedland. Two specimens, 130-140 mm. long.

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[1] Lienard in Sauvage, Hist. Madagascar, XVI, 1891, pls. XXIX., XXXII., and XXXIV.

[2] Waite, Rec. Austr. Mus., III., 1900, p. 203, pl. XXXV.

Family CARANGIDAE.

TRACHINOTUS RUSSELII, Cuvier and Valenciennes ?

Trachynotus russellii, Day, Fish. India, 1878, p. 233, pl. LI, b, fig. 3.
Trachinotus russelli, Stead, Ed. Fish N.S.Wales, 1908, p.29, pl. LXII.

D.VII. 24 ; A.II.I.20. Head 3.53, depth 2.24 in the length to the hypural. Eye a little shorter than the snout, 4.3 in the head. Maxillary reaching to below the anterior portion of the pupil. Pectoral 1.3, ventral 2 in the head and reaching to the vent. Dorsal lobe a little shorter than the base of the soft portion of the fin ; anal lobe longer, longer than the base of the fin. Caudal lobes, measured from the hypural, almost equal to the height of the body; 2.26 in the length. An indefinite dark spot above the origin of the lateral line followed by four others placed just above the line, the last very indistinct. Dorsal and anal lobes dark as are the outer margins of the caudal.

One specimen, 265 mm. long, from Bernier Island.

An examination of the specimens of *T. russelii* available to me indicates considerable variation in this species and particularly in the depth of the body, length of the fin-lobes, etc., but the West Australian example has a larger head and more obtuse snout that others from Port Jackson and Lord Howe Island.

Ogilby has suggested[1] that the records of *T. russelii* and *T. baillonii*, Lacépède, from Australia require verification. It is of interest to note, therefore, that I have collected the latter at Murray Island in the Torres Strait, while I cannot separate Port Jackson and Lord Howe Island examples from *T. russelii*.

Family BLENNIIDAE.

BLENNIUS TASMANIANUS, Richardson.

Blennius tasmanianus, Waite, Rec. Austr. Mus., VI., 1906, p. 205, pl. XXXVI., fig. 5. *Id.*, Hall, Proc. Roy. Soc. Tasm., 1902, p. 1.

Seven examples of this extraordinarily variable species from Fremantle, do not differ from some Tasmanian specimens in the Australian Museum. Length 47-77 mm.

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[1] Ogilby, Proc. Roy. Soc. Qld., XXI, 1908, p. 15.

Family BATRACHOIDIDAE.

Genus PSEUDOBATRACHUS, Castelnau ?

? Pseudobatrachus, Castelnau, Res. Fish. Austr. (Vict. Offic. Rec. Philad. Exhib.), 1875, p. 24 (*P. striatus*, sp. nov.)
Batrachomoeus, Ogilby, Ann. Qld. Mus., No. 9, 1908, p. 46 (*B. minor*, sp. nov. =*Batrachus dubius*, Shaw).

I follow Ogilby in regarding *Pseudobatrachus* and *Batrachomoeus*, as probably identical, but prefer to use the earlier name until they can be shown to be distinct.

PSEUDOBATRACHUS DUBIUS, Shaw.

Lophius dubius, Shaw in White, Voy. N.S. Wales, 1790, p. 265 and plate.
Batrachus dubius, Richardson, Voy. "Erebus" and "Terror" Fishes, 1844. p. 16, pl X, figs. 1-2. *Id.*, Günther, Brit. Mus. Cat. Fish, III, 1861, p. 169, and Ann. Mag. Nat. Hist. (3), XX, 1867, p. 61. *Id.*, Castelnau, Proc. Linn. Soc. N.S. Wales, III, 1879, p. 353. *Id.*, Macleay, Proc. Linn. Soc. N.S. Wales, V. 1881, p. 572. *Id.*, Ogilby, Cat. Fish. N.S. Wales, 1886, p. 31.
Batrachoides dubius, Waite, Mem. N.S. Wales Nat. Club, 1904, p. 54.
Thalassophryne coeca, de Vis, Proc. Linn, Soc. N.S. Wales, IX, 1884, p. 547.
Batrachomoeus coecus, Ogilby, Ann Qld. Mus., No. 9, 1908, p. 49.

Batrachomoeus minor, Ogilby, Ann. Qld. Mus., No. 9, p. 47.
? Batrachus trispinosus, Kner, Reise "Novara," Zool., I., 1865, p. 189 (not of Günther).

[? Not *Batrachus dubius*, Alleyne and Macleay, Proc. Linn. Soc. N.S. Wales, I., 1877, p. 335. *Id.*, Macleay, *loc. cit.*, VIII, 1883, p. 267.

Opsanus dubius, Jordan and Seale, Bull. U.S. Fish. Bur., XXV, 1906, p. 416 after Macleay.

Pseudobatrachus striatus, Castelnau, Res. Fish. Austr. (Vict. Offic. Rec. Phliad. Exhib.), 1875, p. 24.

Batrachus striatus, Macleay, Proc. Linn. Soc. N.S. Wales, V., 1881, p. 574.]

The first notice of this fish consists of a few lines of descriptive matter, accompanied by a very defective figure. No definite locality is given for it, though judging from White's narrative, it was almost certainly collected in, or very near, Port Jackson. Only one species of the Batrachoididae occurs near Sydney, where it is not uncommon, and is doubtless identical with that figured by Shaw. Ogilby[1] has placed *B. dubius* in the synonymy of *Coryzichthys diemensis*, Le Sueur, but I see no reason to accept this especially as that species is not so far known from New South Wales.

Ogilby described specimens from Moreton Bay as *Batrachomoeus minor*, and while recognising their probable identity with the

[1] Ogilby, Ann. Qld. Mus., No. 9, 1908, p. 51.

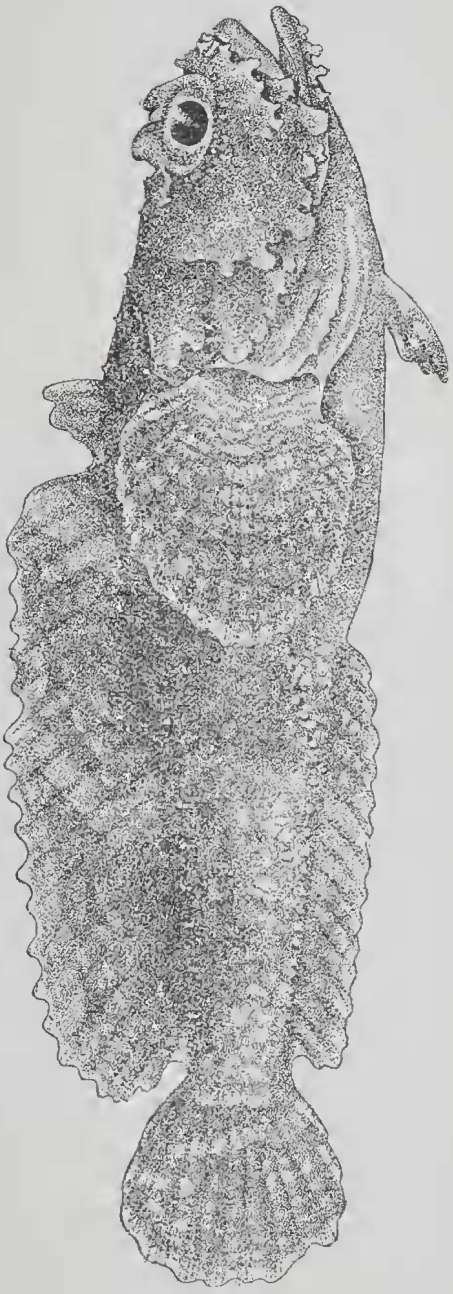

FIGURE I.

Pseudobatrachus dubius, Shaw.

Batrachus dubius of most authors, though not of Shaw, he considered they differed in having a narrower interorbital space and shorter tentacles. I have compared two specimens received from him as his species, with others from Port Jackson and find them identical in every way. In a well graduated series of fourteen specimens, 45-320 mm. long, the interorbital width increases regularly with size, being much narrower than the eye in young specimens, and considerably wider than it in adults. The tentacles are always short and thick. In Richardson's figure, by which Ogilby has probably been guided, they are shown much too long and straggling.

There is a young specimen 102 mm. long, in the Australian Museum from Garden Island, Port Jackson, caught and beautifully preserved by my friend Staff Paymaster P. B. Stevens, R.N. It shows the form and arrangement of the tentacles and colour particularly well, though the former are proportionately larger than in older examples, and is figured above.

Mr. Ogilby has recently informed me he is now sure that *Thalassophryne coeca*, de Vis, is merely the adult of the estuarine form which he described as *Batrachomoeus minor*. He also agrees that both are synonymous with *P. dubius*, de Vis' specimen being a large example from deep water.

A single large specimen is in the Western Australian Museum from Fremantle. Macleay recorded specimens from Torres Strait and New Guinea, but the records need verification, since his specimens are no longer in the Macleay Museum and his identifications of all specimens of this family were very faulty.

Family ANTENNARIIDAE.

ANTENNARIUS UROPHTHALMUS, Bleeker.

Chironectes caudimaculatus, Richardson, Zool. "Erebus" and "Terror," Fishes, 1848, p. 125, pl. LX., figs. 8-9 (perhaps not *C. caudimaculatus*, Rüppell.)

Antennarius caudimaculatus, Bleeker, Atl. Ichth., V., 1865, p. 15, pl. CXCVII. fig. 6.

Antennarius urophthalmus Bleeker, Nat. Tyd. Ned. Ind., II., 1851, p. 488. *Id.*, Günther, Brit. Mus. Cat. Fish., III., 1861, p. 192. *Id.*, Macleay, Proc. Linn. Soc N.S.Wales, II., 1878, p. 356. *Id*, Klunzinger, Sitzb. Akad. Wiss. Wien., LXXX, i., 1879, p. 388.

A specimen from Broome, 120 mm. long, agrees very well with Richardson's and Bleeker's figures of this species. It has not previously been recorded from Western Australia.

PTEROPHRYNE HISTRIO, Linnaeus.

Antennarius marmoratus, Günther, Journ. Mus. Godeffroy, V., 1876, p. 162, pl. C. fig. a.

One specimen from Western Australia without definite locality. Length 67 mm.

Family TETRAODONTIDAE

SPHEROIDES PLEUROGRAMMA, Regan.

Tetrodon hypselogeneion, Steindachner, Sitzb. Akad. Wiss. Wien, LIII, 1866, p. 478, *Id.*, Günther, Brit. Mus. Cat. Fish., VIII, 1870, p. 277 (part). *Id.*, Macleay, Proc. Linn. Soc. N.S.Wales, VI. 1881, p. 337. *Id.*, Waite, Rec. Austr. Mus., V., 1903, p. 38 (not *T. hypselogeneion*, Bleeker).

Tetrodon pleurogramma, Regan, Proc. Zool. Soc., 1902 (1903), II., p. 300, pl. XXIV fig. 2.

A large example, 165 mm. long, from Fremantle, differs from smaller ones from Eastern Australia only in having the white spots on the back larger and more distinct. The Australian Museum collection includes specimens from near Sydney, New South Wales; Moreton Bay, Queensland; and Lord Howe Island.

Family BALISTIDAE.

ABALISTES STELLARIS, Bloch and Schneider. var. PHALERATUS, Richardson.

Balistes phaleratus, Richardson, Stokes' Discov. in Austr., I., 1846, p. 484, pl. V., fig. 4.

Balistes stellatus, Günther, Brit. Mus. Cat. Fish., VIII., 1870, p. 212.

Two young specimens from Port Hedland, 110-115 mm. long, differ from Indian specimens of the typical *stellaris* in some details of colour marking. Instead of the small light spots on the body, the sides bear numerous large angular grey spots, and the blackish marking on the upper parts is formed of similar darker spots placed closer together. The first dorsal is largely black, and the second dorsal, anal, and caudal are marked with large greyish spots and bands, the last named fin also having a blackish margin. This form is evidently a variety of *A. stellaris*, and was described and figured from Western Australia by Richardson as *B. phaleratus*.